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Test 1518: Versatile 256 Diesel Hydrostatic

Nebraska Tractor Test Lab

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NEBRASKA TRACTOR TEST 1518 — VERSATILE 256 DIESEL
HYDROSTATIC

POWER TAKE-OFF PERFORMANCE

Power Hp (kW)	Crank shaft speed rpm	Fuel Consumption			Temperature °F (°C)			Barometer inch Hg (kPa)
		gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Cooling medium	Air wet bulb	Air dry bulb	
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—552 rpm)								
84.36 (62.91)	2500	5.211 (19.723)	0.432 (0.263)	16.19 (3.190)	185 (84.7)	64 (17.7)	75 (23.8)	28.81 (97.29)
Standard Power Take-off Speed (540 rpm) — One hour								
85.08 (63.44)	2447	5.171 (19.574)	0.425 (0.259)	16.45 (3.241)	188 (86.6)	65 (18.1)	76 (24.3)	28.81 (97.29)
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
74.59 (55.62)	2603	4.874 (18.451)	0.457 (0.278)	15.30 (3.015)	183 (83.6)	63 (17.2)	73 (22.8)	..... .....
0.00 (0.00)	2714	1.788 (6.767)	..... .....	..... .....	178 (81.1)	64 (17.5)	74 (23.3)	..... .....
37.82 (28.20)	2637	3.202 (12.122)	0.593 (0.360)	11.81 (2.326)	187 (86.1)	65 (18.1)	75 (23.6)	..... .....
85.14 (63.49)	2501	5.226 (19.781)	0.430 (0.261)	16.29 (3.210)	188 (86.4)	65 (18.1)	75 (23.9)	..... .....
19.08 (14.23)	2660	2.465 (9.331)	0.904 (0.550)	7.74 (1.525)	187 (86.1)	65 (18.3)	76 (24.4)	..... .....
56.00 (41.76)	2605	3.957 (14.978)	0.494 (0.301)	14.15 (2.788)	182 (83.3)	65 (18.1)	75 (23.6)	..... .....
Av Av	45.44 (33.88)	2620 (13.572)	3.585 (0.336)	0.552 (2.497)	184 (84.4)	64 (17.9)	75 (23.6)	29.82 (97.33)

The following performance figures apply to tractor chassis S/N
256 85 209050 and above.

DRAWBAR PERFORMANCE

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank- shaft speed rpm	Slip %	Fuel Consumption			Temp. °F (°C)			Barom. inch Hg (kPa)
					gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Cool- ing med	Air wet bulb	Air dry bulb	
Maximum Available Power—Two Hours 5.5 MPH 2nd Range											
60.62 (45.20)	4122 (18.34)	5.51 (8.87)	2500	3.53	5.130 (19.419)	0.592 (0.360)	11.82 (2.328)	193 (89.2)	69 (20.6)	79 (26.1)	29.03 (98.01)
75% of Pull at Maximum Power—Ten Hours 5.5 MPH 2nd Range											
51.69 (38.54)	3219 (14.32)	6.02 (9.69)	2599	2.53	4.668 (17.672)	0.632 (0.384)	11.07 (2.181)	195 (90.7)	68 (19.8)	75 (23.8)	28.95 (97.76)
50% of Pull at Maximum Power—Two Hours 5.5 MPH 2nd Range											
36.05 (26.88)	2146 (9.55)	6.30 (10.14)	2612	1.56	3.787 (14.335)	0.735 (0.447)	9.52 (1.875)	189 (87.2)	74 (23.1)	84 (28.9)	29.01 (97.95)
50% of Pull at Reduced Engine Speed—Two Hours Speed Setting—9.8 MPH 3rd Range at 2500 Engine RPM											
36.03 (26.87)	2147 (9.55)	6.29 (10.13)	1600	1.63	2.979 (11.278)	0.579 (0.352)	12.09 (2.382)	184 (84.2)	69 (20.3)	71 (21.7)	29.01 (97.95)
MAXIMUM POWER AT SELECTED SPEEDS											
54.49 (40.64)	9134 (40.63)	2.24 (3.60)	2501	14.78	The infinitely	1st Range	183 (83.9)	59 (15.0)	66 (18.9)	29.02 (98.00)	
60.77 (45.31)	7499 (33.36)	3.04 (4.89)	2499	8.13	variable drive	1st Range	193 (89.4)	59 (15.0)	66 (18.9)	29.02 (98.00)	
61.50 (45.86)	6647 (29.57)	3.47 (5.58)	2501	6.74	control was	1st Range	186 (85.6)	60 (15.6)	67 (19.4)	29.03 (98.03)	
60.38 (45.03)	5649 (25.13)	4.01 (6.45)	2502	5.36	set to give	1st Range	183 (83.9)	60 (15.6)	67 (19.4)	29.03 (98.03)	
61.61 (45.94)	5082 (22.61)	4.55 (7.32)	2499	4.68	the travel	2nd Range	191 (88.1)	63 (17.2)	69 (20.6)	29.04 (98.06)	
62.60 (46.68)	4697 (20.89)	5.00 (8.04)	2499	4.25	speeds shown.	2nd Range	194 (89.7)	63 (17.2)	69 (20.6)	29.04 (98.06)	
62.81 (46.84)	4292 (19.09)	5.49 (8.83)	2500	3.69		2nd Range	193 (89.2)	65 (18.3)	72 (22.2)	29.05 (98.10)	
61.76 (46.05)	3861 (17.17)	6.00 (9.65)	2499	3.24		2nd Range	191 (88.3)	65 (18.3)	73 (22.8)	29.05 (98.10)	
60.60 (45.19)	3504 (15.58)	6.49 (10.44)	2498	2.99		2nd Range	189 (87.2)	66 (18.9)	74 (23.3)	29.05 (98.10)	
60.06 (44.79)	3221 (14.33)	6.99 (11.25)	2500	2.60		2nd Range	186 (85.6)	66 (18.9)	75 (23.9)	29.04 (98.06)	
60.36 (45.01)	3018 (13.42)	7.50 (12.07)	2499	2.34		2nd Range	192 (88.9)	67 (19.4)	76 (24.4)	29.04 (98.06)	
58.09 (43.32)	2296 (10.21)	9.49 (15.27)	2499	1.82		3rd Range	192 (88.9)	67 (19.4)	76 (24.4)	29.04 (98.06)	

LUGGING ABILITY FROM SPEED SETTING 5.5 MPH 2ND RANGE

Crankshaft Speed rpm	2500	2251	1999	1745	1501	1256
Pull—lbs (kN)	4292 (19.09)	4770 (21.38)	5213 (23.37)	5571 (24.97)	5525 (24.76)	5518 (24.73)
Increase in Pull %	0	11	21	30	29	29
Power—Hp (kW)	62.81 (46.84)	61.08 (45.55)	57.70 (43.02)	52.02 (38.79)	44.81 (33.42)	37.40 (27.89)
Speed—Mph (km/h)	5.49 (8.83)	4.80 (7.73)	4.15 (6.68)	3.50 (5.64)	3.04 (4.90)	2.54 (4.09)
Slip %	3.69	4.12	4.74	5.24	5.24	5.11

Department of Agricultural Engineering

Dates of Test: May 10-21, 1984

Manufacturer: VERSATILE FARM EQUIP-
MENT, 1260 Clarence Avenue, Winnipeg,
Manitoba Canada R3T 1T3

FUEL, OIL AND TIME: Fuel No. 2 Diesel
Cetane No. 46.0 (rating taken from oil company's
inspection data) Specific gravity converted to 60°/
60° (15°/15°) 0.8405 Fuel weight 6.998 lbs/gal
(0.839 kg/l) Oil SAE 15W-40 API service classi-
fication SE, CC, CD To motor 2.809 gal
(10.633 l) Drained from motor 2.315 gal
(8.763 l) Transmission and final drive lubricant
Versatile Hy-Gear 23 Hydrostatics fluid Dexron
II Final drive lubricant SAE 85W90 Total time
engine was operated 48.5 hours.

ENGINE: Make Consolidated Diesel Corpora-
tion Diesel Type four cylinder vertical with tur-
bocharger Serial No. 44105169 Crankshaft leng-
thwise Rated rpm 2500 Bore and stroke 4.02" ×
4.72" (102 mm × 120 mm) Compression ratio 17.5
to 1 Displacement 239 cu in (3921 ml) Starting
system 12 volt Lubrication pressure Air cleaner
two paper elements Oil filter one full flow car-
tridge Oil cooler engine coolant heat exchanger
for crankcase oil, radiator for hydrostatics oil
Fuel filter two paper cartridges Muffler vertical
Cooling medium temperature control one ther-
mostat.

CHASSIS: Type four wheel drive Serial No.
256 84 205769 Tread width rear 63.4" (1610 mm)
to 95.2" (2418 mm) front 63.4" (1610 mm) to 95.2"
(2418 mm) Wheel base 86" (2184 mm) Center of
gravity (without operator or ballast, with mini-
mum tread, with fuel tank filled and tractor ser-
viced for operation) Horizontal distance forward
from center-line of rear wheels 46.5" (1181 mm)
Vertical distance above roadway 37" (940 mm)
Horizontal distance from center of rear wheel
tread 0" (0 mm) to the right/left Hydraulic control
system direct engine drive Transmission infinite-
ly variable hydrostatic using a variable displace-
ment pump and fixed displacement motor, plus a
3 speed manual transmission. Advertised speeds
mph (km/h) Late chassis S/N forward 0-5.2 (8.4),
0-8.5 (13.7), 0-19.9 (32.0) reverse 0-5.2 (8.4), 0-
8.5 (13.7), 0-19.9 (32.0) Early chassis S/N for-
ward 0-5.2 (8.4), 0-9.7 (15.6), 0-19.9 (32.0), re-
verse 0-5.2 (8.4), 0-9.7 (15.6), 0-19.9 (32.0) Clutch
none Brakes caliper disc hydraulically operated
by foot pedal Steering hydrostatic and articu-
lated Turning radius (on concrete surface with-
out brake) right 173.8" (4.41 m) left 173.8" (4.41
m) Turning space diameter (on concrete surface
without brake) right 362.8" (9.21 m) left 362.8"
(9.21 m) Power take-off 540 rpm at 2447 engine
rpm.

REPAIRS and ADJUSTMENTS: No repairs or
adjustments.

TRACTOR SOUND LEVEL WITH CAB	early S/N dB(A)	late S/N dB(A)
Maximum Available Power—Two Hours	81.5	78.5
75% of Pull at Maximum Power—Ten Hours		79.0
50% of Pull at Maximum Power—Two Hours		79.0
50% of Pull at Reduced Engine Speed—Two Hours		76.0
Bystander in 3rd Range		88.0

SUPPLEMENTARY TESTS
The following performance figures apply to tractor chassis S/N
256 84 205789 and below.
DRAWBAR PERFORMANCE

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank- shaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) Cool- ing med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 5.5 MPH 2nd Range											
61.13 (45.59)	4157 (18.49)	5.52 (8.88)	2500	3.43	5.194 (19.663)	0.595 (0.362)	11.77 (2.318)	192 (88.9)	66 (18.6)	71 (21.7)	28.81 (97.27)

MAXIMUM POWER AT SELECTED SPEEDS										
53.05 (39.56)	9143 (40.67)	2.18 (3.50)	2518	14.97	The infinitely	1st Range	192 (88.6)	64 (17.8)	67 (19.4)	28.86 (97.46)
58.91 (43.93)	7368 (32.77)	3.00 (4.83)	2501	7.73	variable drive	1st Range	183 (83.9)	64 (17.8)	67 (19.4)	28.86 (97.46)
59.72 (44.54)	6438 (28.64)	3.48 (5.60)	2499	6.14	control was	1st Range	197 (91.7)	64 (17.8)	67 (19.4)	28.86 (97.46)
60.07 (44.79)	5631 (25.05)	4.00 (6.44)	2500	5.17	set to give	1st Range	186 (85.6)	65 (18.3)	68 (20.0)	28.85 (97.42)
59.95 (44.71)	4953 (22.03)	4.54 (7.31)	2501	4.31	the travel	2nd Range	199 (92.5)	65 (18.3)	68 (20.0)	28.85 (97.42)
60.73 (45.29)	4565 (20.30)	4.99 (8.03)	2499	3.87	speeds shown.	2nd Range	195 (90.3)	65 (18.3)	68 (20.0)	28.85 (97.42)
61.58 (45.92)	4185 (18.62)	5.52 (8.88)	2502	3.43		2nd Range	200 (93.1)	66 (18.9)	71 (21.7)	28.80 (97.25)
62.29 (46.45)	3878 (17.25)	6.02 (9.70)	2500	3.18		2nd Range	185 (84.7)	66 (18.9)	69 (20.6)	28.84 (97.39)
62.32 (46.47)	3592 (15.98)	6.51 (10.47)	2499	2.92		2nd Range	189 (87.2)	66 (18.9)	69 (20.6)	28.84 (97.39)
62.55 (46.64)	3337 (14.84)	7.03 (11.31)	2501	2.60		2nd Range	191 (88.1)	66 (18.9)	70 (21.1)	28.83 (97.35)
61.92 (46.17)	3105 (13.81)	7.48 (12.03)	2502	2.34		2nd Range	189 (86.9)	66 (18.9)	70 (21.1)	28.83 (97.35)
58.92 (43.93)	2328 (10.36)	9.49 (15.27)	2502	1.76		3rd Range	194 (89.7)	66 (18.9)	71 (21.7)	28.83 (97.35)

TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi (kPa)	Two 16.9-28; 6; 18 (125)	Two 16.9-28; 6; 18 (125)
Ballast	—Liquid (each)	None	None
	—Test Equip. (each)	105 lb (48 kg)	None
Front Tires	—No., size, ply & psi (kPa)	Two 16.9-28; 6; 18 (125)	Two 16.9-28; 6; 18 (125)
Ballast	—Liquid (each)	550 lb (249 kg)	None
	—Cast Iron (each)	None	None
Height of Drawbar		18 in (460 mm)	18 in (460 mm)
Static Weight with Operator—Rear		4410 lb (2000 kg)	4200 lb (1905 kg)
	—Front	6050 lb (2744 kg)	4950 lb (2245 kg)
	—Total	10460 lb (4744 kg)	9150 lb (4150 kg)

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test codes and the technically equivalent ISO test codes or official Nebraska test procedure. For the maximum power tests, the fuel temperature at the injection pump was maintained at 131°F (55.0°C). Twelve travel speeds were chosen between 15% slip and 10 mph (16.1 km/h). The tractor was tested with the new transmission (SN 256 85 209050 and above). The supplementary tests were performed with the older transmission (SN 256 84 205789 and below).

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. 1518, July 3, 1984.

LOUIS I. LEVITICUS
Engineer-in-Charge

K. VON BARGEN
W. E. SPLINTER
L. L. BASHFORD
Board of Tractor Test Engineers



Versatile 256 Diesel

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